

MENEELY TUBULAR BEARINGS

FOR

STEAM, ELECTRIC AND CABLE CARS



**A few Convincing Facts showing their
Superiority over Ordinary Bearings in**

**Ease of Movement
Economy
Durability
General Efficiency**



THE MENEELY BEARING COMPANY

WEST TROY, N. Y.

U. S. A.

The Canada Switch Manufacturing Co., Ltd.,

Manufacturing Agents for Canada,

MONTREAL, P. Q.

Read These Tests of Tubular Bearings

(Copy)

12 Queen Anne's Gate, Westminster,
London, S. W., March 9, 1895.

MENEELY TUBULAR BEARINGS.

We have the pleasure to enclose,
herewith, table of the results obtained
by the experiments made with the elec-
tric car on the Ryde Pier Electric Rail-
way, Isle of Wight, before and after the
fitting of the bearings.

We are, dear sir,

Yours faithfully,

(Signed) SIEMENS BROS. & CO., Limited,

Alex. Siemens,

Director.

THE splendid results tabulated on the preceeding page are confirmed and supplemented by recent tests on the Albany Railway, where the Tubular Bearing, which has been for nearly three years the standard journal appliance, shows a saving in electric power over ordinary bearings ranging as high as twenty-five (25) per cent.

Comment on the foregoing remarkable and significant showing is, perhaps, unnecessary, but to fix in mind its practical meaning and value a few obvious deductions may be useful.

First. That as *electric power saved is coal saved*, a fairly close estimate in dollars of the annual power saving effected by operating a railway with Tubular Bearings, is furnished by one-quarter of the yearly expenditure for coal.

Second. That, to operate a given number of cars, the reduced motive power installation required represents a material saving in first cost in building new roads, and permits, in the case of existing roads, the operation of a large number of additional cars without increase of power plant.

Third. That to the main, or power saving, are to be added other advantages promoting efficiency and economy. These are (1) the increased speed attainable when necessary, (2) the four-fifths oil saving, (3) the durability, which, guaranteed for three years, is certain to double that period with the commonest care, and (4) the greatly lessened strain on the motor mechanism.

On the well-managed, dividend-paying electric systems of Albany and Troy not only have Tubular Bearings been adopted as standard, but upward of one hundred heavy electric cars—the number of which is soon to be increased on both systems by new equipment—are in daily service on the bearings. Of these, the major portion have been in constant service for two and one-half years; some of the mileages attained doubtless exceeding 150,000 miles.

STEAM PASSENGER TRAIN TESTS

Dynamometer, coal and durability tests of Tubular Bearings in steam passenger train service demonstrate their peculiar fitness for fulfilling the severe conditions of steam railroading. The first set of Tubular Bearings manufactured, and which

embodied crudities both of material and construction, ran for four years under a 50,000 lb. passenger coach, attaining a record of 143,869 miles. A train of four passenger coaches, weighing 204,000 lbs., mounted on improved bearings, has been in daily service on the Delaware & Hudson Canal Co.'s lines for two years and eight months (September 1, 1892, to date) with a recorded mileage of 115,310 miles, and both bearings and journals are in perfect condition. The results of coal, dynamometer and gravity tests, taken by officials of the D. & H. C. Co., are given below. The coal test was continued for two days with each train, and the same locomotive, No. 134, hauled both trains.

Ordinary Bearings. Coal consumed in running	
270 miles.....	14,800 lbs.
Tubular Bearings. Coal consumed in running	
270 miles.....	11,100 "
Excess of coal consumption with Brasses.....	3,700 lbs.

Or one-third more than the train with Tubular Bearings required. Coal saving, 25%

To determine the power required to start each train they were successively placed upon the same track, at a marked position, and a given number of pulls taken in both directions with an accurate dynamometer, the result being as follows:

Average power required to start train with Brasses	3,276 lbs.
Average power required to start train with Tubular Bearings	252 "

Saving in initial moving force, 92%

At the request of Mr. J. L. Cory, M. M., who conducted the tests, one man repeatedly pushed the entire Tubular Bearing train in both directions unaided.

At a gravity test with single cars starting from the same point, the car with Brasses ran 100 ft. from the foot of grade, while the Tubular Bearing car ran 534 ft., the last 400 ft. of which was slightly up grade.

ON STEAM ROADS THE USE OF TUBULAR BEARINGS SECURES

1. A saving of ninety per cent in required initial motive power.
2. A saving of from twenty-five to forty per cent in the fuel consumed by the engine.
3. A saving of eighty per cent in journal lubricants.
4. A guaranteed service of 200,000 miles.
5. An absolute avoidance of "hot journal boxes."
6. A higher rate of speed and ability to run larger trains.
7. An instantaneous effect in reduction of speed when the brakes are applied.
8. A journal resistance no greater in winter than in summer.
9. A cleanly track and running gear.
10. A saving, above first cost, of from \$250 to \$300 per car, per year.

That a rolling bearing has at last become an undoubted mechanical success is not generally known. Tubular Bearings are now, however, not only being manufactured in the United States for progressive steam and street railways looking for appliances to promote efficiency and economy, but have been made in England for more than a year by the famous firm of Siemens Brothers & Co., Ltd., of world-wide reputation as electrical engineers, manufacturers and cable makers, who have erected a special plant for their production. The Messrs. Siemens have adopted Tubular Bearings for their large dynamos, and are placing them wherever possible in steam and street railway service.

In Canada, Tubular Bearings are being made by one of the leading railway supply manufacturing companies in the Dominion, the Canada Switch Mfg. Co., of Montreal.

Extracts from a letter of Judge John W. McNamara, general manager of the Albany Railway:

"We were the first street railway to adopt the first form of bearing manufactured by the (Meneely Bearing) company and used it for over three years. * * * We were so much impressed with the efficiency of the roller bearing over the ordinary brass bearing that we believe our ability to operate as many cars as we did, up steep grades with so little power, was due to the fact that it takes less power to start a car equipped

with these bearings than one with ordinary equipment. It is, perhaps, proper that the writer should add that he has no pecuniary interest in the company, either directly or indirectly, and gives his testimony from a sense of duty. Knowing that we have a good thing, and that it saves us trouble and expense in operation, we desire 'to do to others as we would like to have them do to us,' and, therefore, give our experience."

Letter of Mr. Charles H. Smith, Superintendent Troy City Railway (who is also a disinterested witness):

"We have in use on our different lines one hundred and forty-eight Meneely Tubular Bearings, or thirty-seven cars complete, the larger portion of which have been in use for over two years. We take great pleasure in saying that during this time the results have been away beyond our expectations. We earnestly recommend the bearings as doing all that is claimed for them, and have learned from experience that it is money well invested."

The Delaware & Hudson Canal Co. has five passenger coaches equipped with Tubular Bearings running regularly upon its lines of railway, and concerning which we are at liberty to refer to Mr. R. C. Blackall, Superintendent of Motive Power and Machinery, Albany, N. Y.; the Boston & Albany R. R. operate one through car, and the Grand Trunk Railway of Canada is equipping a train of six new passenger coaches.

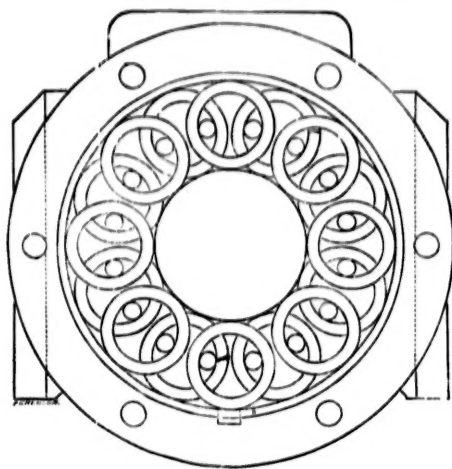
FOR PRICES, PLANS AND DETAILED INFORMATION, ADDRESS,

MENEELY BEARING CO.,

WEST TROY, N. Y.

MENEELY TUBULAR BEARING

Bearing consists of but two strong parts, duplicated. No cages or rigid frames.
Sliding, grinding friction wholly eliminated.
Automatic alignment. No journal wedging. Brake blows neutralized.



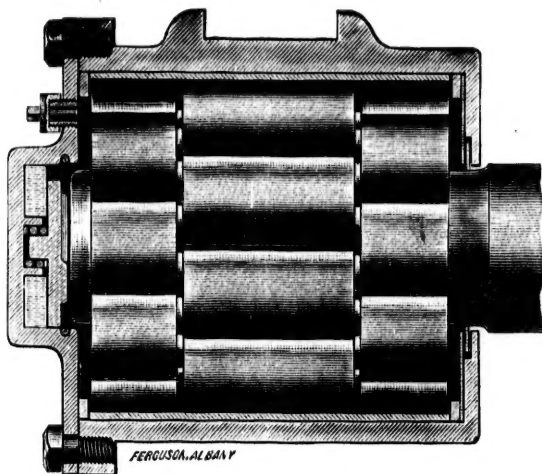
Steel Axle—Collarless journal.

Housing—Cast iron, lined with plate steel.

Head, or Cap—Malleable iron, bronze thrust plate.

Rollers—Weldless, unbreakable steel tubes of spiral fibre.

Separators—Cold rolled steel.



FERGUSON, ALBANY

Separating surfaces from end to end to resist wear.
Spiral-fibre, unbreakable rollers sustaining 3,000 lbs. to linear inch. No stress on separators.
Lightness, simplicity, strength and safety.